REMARKS

Office Action

In the Office Action mailed September 20, 2007, the Examiner rejected claims 1-6 and 8-18 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,442,344 to Merkle et al. (hereinafter "Merkle") in view of U.S. Patent Number 4,935,344 to Ishiguro et al. (hereinafter "Ishiguro"). The Examiner also rejected claim 7 under 35 U.S.C. 103(a) as being unpatentable over Merkle in view of U.S. Patent Number 7,002,131 to Lewis (hereinafter "Lewis"). For reasons set forth more fully below, Applicant traverses both grounds of rejection and requests that all pending claims be allowed over all references of record.

Section 103 Ground of Rejection

Claims 1 and 13

Claim 1 requires that the optical transmitter include a high intensity light emitting diode (LED). Claim 13 is similar in that it requires the generation of high intensity light pulses in accordance with a data signal. Acknowledging that Merkle does not show a high intensity LED, the Examiner asserts that one of ordinary skill in the art would have been motivated to replace the LED of the transmitter in Merkle with the LED of Ishiguro "in order to illuminate the supper (*sic*) bright light which is more visible than a normal LED." Applicant respectfully disagrees with the Examiner as to the teachings of Ishiguro and the motivation to combine Ishiguro with Merkle.

Ishiguro teaches an improvement to a system that uses an emission from an infrared LED to determine the distance at which an object is located from a still image camera for purposes of adjusting the focus of a lens. *Ishiguro*, col. 1, line 25 to col. 2, line 45. The LED used for the emission is the same in prior art circuit and in the improved circuit. *Ishiguro*, col. 3, lines 26-46 (use of reference number 11 for the LED in the prior art circuit of FIG. 4 and the improved circuit of FIG. 3 indicates no change was made in the LED of both circuits). The improvement arises from whether a low voltage or high voltage is input to the operational amplifier to affect the amount of current supplied by transistor 71 to LED 11. *Ishiguro*, col. 6, line 49 to col. 7, line 21. The amount of current determines whether the LED provides a low intensity infrared light or a higher intensity infrared light. Consequently, Ishiguro does not teach the use of a high intensity LED in the range finding system of Ishiguro, but rather an adjustable variation of the intensity available from the LED previously used in the known range finding system.

In order for the Examiner to establish a *prima facie* case of obviousness, the Examiner must show that the proposed combination leads to the claimed invention. The Examiner has provided no evidence that the LED of Ishiguro is any different than the LED of Merkle. All that Ishiguro establishes is that an infrared LED can be operated at different current levels to produce different light intensities.

Moreover, one of ordinary skill in the art would not combine the intensity variation circuit of Ishiguro with the data communication emitter of Merkle. Merkle

selectively activates the LED 40 with the microcontroller output 44 to generate coded outputs that correspond to data received by the microcontroller. *Merkle*, col. 4, lines 34-43. The circuit of Ishiguro varies the intensity of the infrared LED to set the levels for photoelectrically converted signals to suitable levels for measuring a distance to an object. *Ishiguro*, col. 2, lines 48-52. Distance to the probe that communicates with the appliance of Merkle is not an issue as the probe is appropriately positioned with reference to the optical window 22 for data communication. *Merkle*, col. 3, lines 14-25. Indeed, the Examiner has not established that any reference teaches that adjustment of intensity or sensitivity for an optical *data* transmitter or receiver is beneficial or desirable. Thus, no one of ordinary skill in the art would view the system of Merkle as needing a circuit to adjust the intensity of the optical transmitter or the sensitivity of the optical receiver to compensate for the probe being further or closer to the window. Hence, no motivation exists for combining the level setting circuit of Ishiguro to measure distance to an object more accurately with the data communication circuit of Merkle.

For at least these reasons, claims 1 and 13 are patentable over all references of record, either alone or in combination.

Claims 2-4

Claims 2-4 depend from claim 1, directly or indirectly, and, therefore, include the limitations of claim 1. Consequently, these claims are patentable for reasons similar to those discussed above with reference to claim 1. Moreover,

inclusion of a LED that generates light that is more intense than an appliance indicator light (claim 2) or a standard LED (claim 3) is not a mere design choice. As already noted, the Examiner has failed to cite a reference that teaches an optical data transmitter needs to be more intense in communicating with a data probe. Applicant's specification is the first to teach this principle and the Examiner's use of it as a known design principle is improper use of Applicant's specification. For at least these additional reasons, claims 2 and 3 are patentable over all references of record, either alone or in combination.

Even more importantly, nothing exists in Merkle or Ishiguro that teaches the intensity levels for a LED as required by claim 4 are useful for data communications. Baker is likewise inapplicable as that reference uses a LED as a human perceptible condition indicator and not as a computer data communication device. These levels are not mere matters of engineering choice. The environment of optical data communication and the environment of optical object distance measurement for adjusting the lens of a still image camera are sufficiently different that engineering choices in those environments evaluate different parameters and different issues. The Examiner has failed to show how values from one environment are applicable to the other environment. To establish a *prima facie* case, the Examiner needs to show how engineering choices in one environment make sense in the other environment. Of course, even if the Examiner could establish that the two environments are somehow related, all that would provide is that the circuit of Ishiguro could be combined with Merkle to adjust the intensity of a standard LED in an optical data

communication circuit. As noted above, nothing in Ishiguro teaches the use of a high intensity LED that generates light more intense than a standard LED, an appliance indicator, or in the intensity range set forth in claim 4. For at least these reasons, claims 2-4 are patentable over all references of record, either alone or in combination.

Claim 5

Claim 5 depends from claim 1 and is patentable for reasons similar to those discussed above with respect to claim 1. Additionally, claim 5 requires that the optical receiver include a sensitive phototransistor. As noted above, Merkle does not teach or suggest a sensitive phototransistor. Ishiguro likewise fails to teach or suggest such a device because it has no optical data receiver in which to incorporate such a phototransistor. Lewis fails to help the Examiner's case as Lewis does not teach sensitivity of a phototransistor to a particular light signal intensity, but rather that some photodetectors may be more sensitive to particular *wavelength* ranges. *Lewis*, col. 7, lines 50-53. The Examiner has failed to show how a phototransistor sensitive to a particular light intensity range is taught by the Lewis reference. Because none of the references of record, either alone or in combination, teach or suggest the sensitive phototransistor of claim 5, this claim is patentable.

Claim 6

Claim 6 depends from claim 5 and, therefore, includes the limitations of claim 5 and is patentable for reasons similar to those discussed above with reference to claim 5. Additionally, the deficiency of Lewis noted above is especially apparent with regard to claim 6 which specifies a particular current response range to a particular light intensity. Lewis cannot provide these sensitivity parameters as Lewis refers to sensitivity in the context of light wavelength and not light intensity. Additionally, the Examiner has failed to explain why one of ordinary skill in the art would adjust the sensitivity of the optical data receiver in Merkle. Applicant's specification is the first to teach the use of a sensitive phototransistor in an optical data receiver and the Examiner's use of it as a known design principle is improper use of Applicant's specification. For at least these additional reasons, claim 6 is patentable over all references of record, either alone or in combination.

Claim 7

Claim 7 requires an optical receiver that includes a sensitive phototransistor. Fig. 3 of Merkle shows the housing of what is described in its specification as a probe, however, it does not show the actual optical emitter and optical detector disclosed in the specification (Col. 3, lines 30-32). FIG. 4, however, shows an optical emitter and detector for the appliance optical transceiver (Col. 4, lines 9-16). The schematic diagram of that figure shows the optical detector as a diode and not as a phototransistor. Thus, the Merkle

reference does not disclose an optical receiver having a phototransistor, but rather a diode. It certainly does not show a sensitive phototransistor as that term is defined by Applicant in the specification. The Merkle reference also fails to suggest that a sensitive phototransistor can be used for an optical data receiver or that a sensitive phototransistor is beneficial for an optical data transceiver.

To overcome this deficiency, the Examiner relies upon Lewis. As noted above, Lewis does not discuss photodetector sensitivity with reference to light intensity, but rather light wavelength. Consequently, Lewis does not teach the limitation missing from Merkle and the Examiner cannot identify a sensitive phototransistor in Lewis that can be substituted into the circuit of Merkle that arrives at the invention of claim 7. Additionally, the Examiner has failed to explain how the environment of the power averaging circuit of Lewis is similar to the environment for optical data communication. Even if the Examiner could show how the environments are sufficiently similar that one might use a component in Lewis in the circuit of Merkle, the best that would result is the use of a photodetector that is sensitive to a particular wavelength and not a range of light intensity. For at least these reasons, claim 7 is not rendered obvious by the combination of Merkle and Lewis. Therefore, the Applicant submits that claim 7 is patentable over all references of record, either alone or in combination.

The burden of proof that Merkle discloses a sensitive phototransistor is on the Examiner. The Examiner has not indicated what constitutes a sensitive phototransistor and no support appears to exist in either Merkle or Lewis that a light intensity sensitive phototransistor is taught by either reference. Therefore,

the Examiner has failed to make a *prima facie* case for obviousness and Applicant submits that the rejection of claim 7 should be withdrawn.

Claim 8

Claim 8 depends from claim 7 and, therefore, includes the limitations of claim 7. Thus, this claim is patentable for reasons similar to those discussed with reference to claim 7. Moreover, the deficiency of Lewis noted above is especially apparent with regard to claim 8 which specifies a particular light intensity for the sensitive phototransistor. Lewis cannot provide these sensitivity parameters as Lewis refers to sensitivity in the context of light wavelength and not light intensity. Additionally, the Examiner has failed to explain why one of ordinary skill in the art would adjust the sensitivity of an optical data receiver. Applicant's specification is the first to teach the use of a sensitive phototransistor in an optical data receiver and the Examiner's use of it as a known design principle is improper use of Applicant's specification. For at least these additional reasons, claim 8 is patentable over all references of record, either alone or in combination.

Claim 9

Claim 9 depends from claim 7 and is patentable for reasons similar to those discussed above with reference to claim 7. Additionally, claim 9 requires the optical transmitter to have a high intensity LED. As noted above with reference to claim 1, a device having an optical data transmitter with a high

intensity LED is neither taught nor suggested by the references of record, either alone or in combination. For at least these reasons, claim 9 is also patentable.

Claims 10-12

Claims 10-12 depend from claim 9 and, therefore, include the limitations of claim 9. Thus, these claims are patentable for reasons similar to those set forth above with regard to claim 9. Furthermore, Baker is likewise inapplicable to claim 12 as that reference uses a LED as a human perceptible condition indicator and not as a computer data communication device. Consequently, claims 10-12 are patentable over all references of record, either alone or in combination.

Claims 14-16

Claims 14-16 depend from claim 13 and, therefore, include the limitations of claim 13. Thus, these claims are patentable for reasons similar to those set forth above with regard to claim 13. Furthermore, Baker is likewise inapplicable to claim 16 as that reference uses a LED as a human perceptible condition indicator and not as a computer data communication device. Consequently, the invention of claims 14-16 are patentable over all references of record, either alone or in combination.

Claims 17 and 18

Claims 17 and 18 depend from claim 13 and are patentable for reasons similar to those discussed above with reference to claim 13. Additionally, claims 17 and 18 further specify that the electrical data signal generation occurs in response to particular light intensities. Thus, these claims require the generation of high intensity light pulses and the generation of an electrical data signal in response to low intensity light. Moreover, the Examiner's position that the particular ranges set forth in these claims are mere design choices is untenable for reasons discussed above with regard to claims 6 and 8. Accordingly, for reasons similar to those noted above with reference to those claims, claims 17 and 18 are also patentable.

Conclusion

For the reasons set forth above, all pending claims are patentable over all references of record. Reexamination and allowance of all pending claims are earnestly solicited.

Respectfully submitted,
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